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Music as an agent to human development: a systems approach

Summary

Human beings are uniquely rhythmic beings — without rhythm there is no life. From conception to death the human being is embedded in rhythmic patterns and pulsations. Patterns of biological and personal functioning represent the ever-changing rhythmical dance of life. This article will discuss the connections between the structural and functional components of the individual and music. The dynamic processes observed in the interactions between the human being and music in various contexts lead to an understanding of the dynamics of developmental outcomes which are never a steady hum, but rather symphonic.

Musiek en menslike ontwikkeling: 'n sistemiese benadering

Die mens is 'n unieke ritmiese wese — sonder ritme is daar geen lewe nie. Van konsepsie tot die dood is daar 'n verweefdheid met ritmiese patrone en die polsing van die lewe self. Patrone en prosesse van biologiese en persoonlike funksionering is 'n voortgaande ritmiese dans. In hierdie artikel word die verwantskap tussen die strukturele en funksionele komponente van die individu en musiek bespreek. Dit is 'n dinamiese proses wat uit die interaksies tussen die mens en musiek in verskillende kontekste lei tot 'n nuwe begrip vir die dinamiese ontwikkelingsuitkomste wat in die simfonie van die lewe teenwoordig is.

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Gaston (1968: 15) postulates that

> Music is the essence of humanness, not only because man creates it, but because he creates his relationship to it. Music is an essential and necessary function of man. It influences his behaviour and condition and has done so for thousands of years.

In this article I would like to present a new perspective on the inter-relatedness and interdependence of human beings and music in the context of human development. The person-music system is perceived as a whole system with unique properties. Numerous processes of change, variability and stability become evident in the developmental outcomes of the individual in interaction with music. I shall attempt to explain how and why music can be regarded as a participating agent in the dynamic processes of information transformation apparent in human development. Attention will be paid to subjective and inter-subjective relatedness, interdependence, and the structural-functional embeddedness of the human being and music within the context of development.

At the outset it is important to refer to some of the traditional approaches in developmental psychology, specifically with regard to their views of music and people's interaction with music. The theories of development based on traditional approaches can be summarised as follows:

- Evolutionist theories emphasise the biological and genetic aspects of development and the possibility of a "music gene", underestimating environmental factors.
- Cultural theories investigate cross-cultural aspects, the patterns of change shared by different cultures, and the exchange of musical styles between cultures through trans-culturation and acculturation.
- Psychosexual theories attempt to combine the evolutionary and cultural perspectives, emphasising conflict in the individual's interaction with the cultural and normative taboos of society, and ascribing objective criteria (good and bad) to music.

- Cognitive theories focus on the rational capacity of the individual in interaction with the environment, the reciprocal mechanisms for learning and acquiring new behaviour patterns, and the best methods of music education.

Although some theories acknowledge the role of the environment and social interaction in the development of the individual, they can nevertheless be criticised as mechanistic and determinist: "That is, they refer to the what and when of change" (Ford & Lerner 1992: 37). Attempts to explain the interactions of the developing individual with music using the above approaches usually result in linear descriptions of cause-effect and "objective" interpretations of predetermined outcomes. However, when we try to understand the conditions leading to change, the processes and patterns of change, the *how* of change emerges.

According to Ford & Lerner (1992), the conditions leading to developmental change can take place either over a period of time or in an instant. Instead of analysing cause-effect relationships in person-music systems, the focus should be on the "multidimensional sources of [*musical*] influence on individuals and the simultaneous influence of individuals on the systems [*music*] of which they are a part" (Newman & Newman 1995: 126, my italics). There should be an understanding of the individual as a hierarchical information-transforming system utilising language and other forms of culture such as music as special sources of influence on his or her physical, psychic and mental development (Royce & Powell 1983).

We can learn to identify the developmental changes evident in the person-music system by considering the following:

- Differences in kind, or qualitative differences, and differences in amount, or quantitative differences. In this regard we observe developmental outcomes that relate to differences in form (interaction with music that is less or more complex in form and structure), in quality (interaction with different styles and genres of music), or in number (interaction with music as an individual or in groups).
- Various types of differences can be inferred from the comparisons made within different contexts. These include differences of occa-

sion and state, which are of special importance in understanding the person-music system, and contextual differences of time and space, which provide information regarding the levels of functioning of the person-music system under varying conditions.

In person-music systems it is the differences of state, revealed by comparing the system with itself on different occasions, that reveal the role of music as an agent of developmental change. In order to be able to make these observations, it is necessary to identify the steady state. This is the stable or consistent pattern in which the value of some attribute varies in a regular way, but within limits. In the person-music system, psychological and behavioural consistency is a dynamic stability, rather than a fixed state. The small variations which occur from day to day are not considered as developmental change, but rather as the dynamic properties of an autonomous, open system.

Distinctions between concepts of variability, on the one hand, and of change, on the other, are dependent on duration. Temporary changes or variations are typically limited in duration, and eventually the previous steady state is restored. More enduring changes in the person-music system persist over extended periods of time and are unlikely to be reversed. They can therefore be considered as changes that lead to development. Only if we compare a human being's attributes on different occasions (intra-individual differences) will we have a basis for inferring developmental change in the person-music system.

1. Music, the agent

Music is a whole system of emergent properties where sound and musical elements interact within a specific temporal-spatial context in such a way that a structural-functional whole system evolves (Van Schalkwyk 1998). The *universum* of sound (all observed and unobserved sounds) forms a dynamic dialogue in this whole system. The elements of sound and music are interrelated and interdependent, functioning as a structural unit that autonomously interacts and dynamically transacts with other systems within multidimensional contexts. Each subsystem has individually discernable attributes

which themselves also interact on various levels with other systems. Through "the pattern which connects" (Bateson 1979: 16) these sub-systems define the whole system known to us as music.

Music is primarily a product of intentional human activity evolving from the four dimensions of the person-music whole system (Van Schalkwyk 1998). The unique characteristics of the autonomous, open music whole system allow the *universum* of sound to "connect" with other systems, specifically the human being, in a structural fit, creating an interrelated, interdependent and embedded functional whole system. The person-music whole system acts within various temporal and spatial contexts, and is essentially a meaning-generating and reality-constructing whole system.

Various music systems and music practices can be identified as resulting from the intentional activity of the person-music system, and leading to numerous styles, genres and cultural classes of musical products. For the purpose of this article, music will be referred to in a general and collective manner, incorporating all classes of music irrespective of their nature. No distinctions will be made on the basis of relative criteria and value judgements of what can be regarded as "good" or "bad" music, applicable or inapplicable music, acceptable or unacceptable music, effective or ineffective music, ethnic or culture-based music. These distinctions serve no purpose here.

Music, as a participating agent of the developmental outcomes of the individual, provides a context for the transformation of information and energy necessary for the self-regulatory and self-organising processes of change, and for system-in-context organisation and functioning. A successful fit between individual characteristics and music creates a context in which optimal systems organisation and functioning become possible. Because of the relative plasticity of human development, however, no single, ideal developmental fit, pattern of interaction or embeddedness between the individual and music is possible. The interactions are at the most probable and inter-deterministic, rather than determined and predictable.

Furthermore, the context of human development is constantly changing. The historical, cultural and socio-cultural variables which form part of the processes and transactions between the individual and music differ for each individual and in terms of his or her rela-

tedness to music. Development in the person-music system is thus a multi-level process of complex transactions at every level of systems organisation and functioning. This results in a hierarchical organisation of person-music whole systems which increases in complexity at each level of organisation and with every recursive process.

2. The person-music whole system

Understanding the dynamics of open systems is a key to understanding the developmental processes and outcomes in human beings. Ford & Lerner (1992) describe human development metaphorically as never a steady hum, but rather like a symphony, a dynamic equilibrium, an ongoing process of interrelations and embeddedness. Coherent human functioning implies that the individual, as an open whole system, transacts with the context in which he or she functions. The individual selects and processes matter and energy coming from the context, transforming them into information. This is then converted into outwardly directed energy in the form of behaviour. In this way the individual acts as a whole system, an integrated personality, reciprocally bound to other systems and to the ecosystem, and embedded in a conceptual domain of time and space.

Music provides a context for the transformation and integration of information and energy towards processes of change and development. It activates these processes on different levels of organisation, allowing for coherent dialogue between the human being as a biological-psychological system and the context. Through positive and negative feedback loops and feedforward processes, transactions take place that provide for change-related outcomes. This indicates a circular functioning within the individual, as well as between individuals, between the individual and the environment, or the individual and music, as well as between other whole systems.

Three categories can be identified as units of analysis for the purpose of further exploration:

- The structural category as a unit of analysis refers to the physical and actual contact of the objects in interaction on a material level, the individual and music (instrumental, improvised music, recorded music). Each person-music system has its own structure

and properties, determining the structure of the system as a whole within a specific context of time and space.

- The functional category as a unit of analysis refers to the complex network of behaviour patterns, processes of information transformation, and responses in the co-construed person-music system. Various musical realities and meanings evolve subjectively and inter-subjectively within the abstract conceptual context of the system (Minai 1995).

- The dialogical category as a unit of analysis refers to a structural-functional unity and to the multiple contextual variables present in the dialogue between the systems, their interaction with each other and with the context within which they function as person-music whole systems.

Multiple person-music systems evolve, sharing time and space, each emerging as an individual structural-functional whole system. These categories provide for an understanding of the complexities that evolve from the interrelatedness and embeddedness of the individual and music throughout life. The three levels of analysis identified above will be the focus of further investigation towards theory building and the expansion of the knowledge base for music psychology. In so doing, it should be borne in mind that

> [the] consistencies and changes in any single variable or pair of variables usually cannot be adequately identified and understood outside the network of variables in which they are embedded (Ford & Lerner 1992: 217).

2.1 The biological or structural level of analysis

The biological or structural subsystem in the human being as a whole system includes multi-modal perceptual experiences of vision, sound, taste, smell, touch, temperature, and pressure, as well as physical actions combining movement and affect (Ford & Lerner 1992; Louw 1990). Human systems are constantly collecting, storing and releasing energy in various ways, and the sensory-perceptual structures and processes are multidimensional, hierarchical subsystems that transform physical energy into psychological information. This enables the individual to gather information from the environment. It also provides information regarding the internal state of the system such

as affections, movements, experiences, the context, and the relationships between the individual and the context (Jordaan & Jordaan 1989; Royce & Powell 1983).

Concerning the internal state of the system, the interaction between the individual and music results in specific feedback loops in the central nervous system, aimed at organising and regulating the processes of the internal biochemical environment. During critical periods of incremental change, when the sub-systems differentiate and integrate in the process of becoming a whole being, music acts as information for the development of biological and physiological stability. For example, it is well known that the rhythmic sub-system of music has similarities with the rhythmic patterns of the internal biological system: the heart beat, blood circulation, and pulse rate. In this sense the organisation of rhythmic patterns in the music system facilitates the organisation of rhythmic patterns in the biological subsystem, influencing the emerging processes and patterns in the individual as a whole system.

The biochemical environment is interdependently related to all the other subsystems and is influenced by these, while itself influencing them in turn (Harvey & Rapp 1988). If music can alter the biochemical environment (for instance the hormonal secretion of a mother during pregnancy) in such a way that new distinctions are created in the sensory-perceptual transduction of information, the other sub-systems of human functioning have to adapt to these changes in order to maintain their dynamic stability. As such, music, which creates emotional stability, reciprocally influences the total system's development and stability. However, music cannot change any disorganisation in the system caused by substance abuse, genetic deficiencies or other abnormalities. It cannot alter or reverse the developmental outcomes of unsuccessful transformations in the biological subsystem that have led to sensory and/or motor dysfunction.

On the same level as the sensory-perceptual sub-system, the motor sub-system functions as a multidimensional, hierarchical system for transforming psychological information into physical energy. This transformation of information results in actions and behaviour patterns. Through interaction with music, motor activity can be co-

ordinated in terms of behaviour-behaviour and behaviour-context co-ordinates. As Rosenfeld (1985: 56) puts it,

> we respond to music with a mix of psychological and physiological reactions triggered by numerous aspects of the music itself.

Furthermore, Ford & Lerner (1992: 132) claim that the integration of motor activity through interaction with music has resulted in

> entertainment fields such as dance, music and athletics which have made the cultivation of high levels of motor skills a road to fame and fortune.

2.2 The psychological or functional level of analysis

In the psychological or functional sub-system of the human whole system, attention processes become selectively involved in activating the central nervous system. These processes become apparent in coherent, organised and appropriate person-context patterns of behaviour and activity. At this level of organisation the cognitive and affective sub-systems interact with music to result in processes for learning and adaptation. Through information-based cognitive processes music is transformed into psychological information in order to identify variations in the environment. The multi-sensory information provided by music creates what Adelman (1985: 14) calls

> a sound setting for a print or a story, to discriminate tonal colours, to focus on gestures and shapes and inner sensations through movement [...] to make music is to experience the realm of the sensorium. All senses can come into play.

An affective relationship with music transforms psychological information in order to attain optimal arousal states, attention processes and increased perceptual abilities. The individual construes representations that combine perceptual, abstract and symbolic codes from music in order to organise and regulate behaviour patterns. The person-music system becomes a context for emotional arousal patterns that enhance biological functioning and create interaction between cognitive processes and the flow of behaviour, as well as for the affective patterns of person-context transactions. In this regard, music becomes involved in a context for relaxation and peak experiences where the application of chemical substances is unnecessary

(Bonny & Savary 1973; Eagle 1972; Harvey & Rapp 1988). It can also provide information for constructing, revising, extending and manipulating objectives, perceptions, meanings and behaviour patterns.

At the highest level of self-organisation and self-regulation the living system, the developing human being, co-ordinates the integrative processes of style and value (Royce & Powell 1983). Style integrates and modulates information by co-ordinating cognition and affect and by selecting particular modes of processing. In the value system, person-music interactions are integrated in the whole personality and information is modulated in order to achieve specifiable goals, to satisfy special needs, or to select specific information content. The effects of these modulations are further related to bio-psycho-social behaviour patterns and actions. These are expressed in relationships and interactions within multidimensional contexts where various systems, people and music, are structurally connected.

Various behaviour patterns and episodes of behaviour can be distinguished in the co-ordinated person-music system. These patterns are characterised by the unique organisation of the individual and other individuals with whom he or she interacts, as well as the various kinds of music they interact with. In interaction with music the individual and the group co-construe more complex musical behaviour episodes that are natural products and units of behaviour. Musical compositions, activities to music, dancing, and intervention strategies or therapy with music are all examples of the behaviour patterns that evolve from the unique fit between person and music on the functional level. Behavioural schemes evolve as organised, general representations of all relevant interactions between the individual and music over time, resulting in a symbolic language and a consensual domain of meaning.

2.3 The dialogical level of analysis

Music as a symbolic language enhances the creation of meaning in the social interactions between systems sharing the same musical, temporal and spatial framework. The person-music whole system evolves as the ritual context or consensual domain of meanings that include the cultural, sub-cultural and inter-cultural realities co-

constructed within this context (Van Schalkwyk 1998). This ritual context provides the resources, demands, constraints and opportunities for the construction of meanings and realities.

Cultural, sub-cultural and inter-cultural references are essential contexts of human development (Ruben 1983). The culture of music emerges from the dialogue of people in interaction with the same or different kinds of music. Through the reciprocal dialogue evolving from the person-music whole system and the context, meanings are construed that reflect the knowledge frameworks, objectives, values and action patterns of all the systems in interaction. This also includes the distinctions and punctuations which occur in the relationship to music. These processes are neither linear nor rational but subjective and inter-subjective. Acknowledging subjective dialogue and co-constructed realities as properties of the person-music system provides an explanation for emotion that transcends the universality of logic and reason. Subjectivity is supra-rational and includes context, higher-order complexity and the circularity of individual and co-creative generation of meaning (Van Schalkwyk 1998).

Furthermore, culture is created in "a common versum through co-existence in mutual acceptance" (Maturana & Varela 1987: 332). Inter-subjectivity evolves from the person-music system and includes the perceptions, experiences and meanings generated in dynamic social processes. Various systems interact with the music, representing the shared meanings and realities of people participating in a musical activity or listening to music. Sub-cultural and inter-cultural music systems evolve from these shared meanings. In a specific space in time and in the specific manner in which members of a social system share the symbols, meanings, images, habits, values and information-transforming processes, behaviour patterns and episodes of behaviour become apparent in interaction with the music system (Ford & Lerner 1992; Hanson 1995). In this way multiple realities are possible in interaction with music, and the relationships between people and music are essentially unpredictable and probable.

Subjective and inter-subjective meanings evolve at different psychosocial levels of system organisation and functioning. These levels of meaning can be explained according to Bronfenbrenner's (1979) ecological approach. Micro-, meso-, exo- and macro-systems emerge

from different person-music systems, explicating individual, as well as group relationships and interactions with music.

- At the level of the micro-system, the individual experiences a personal relationship with music, creating individual patterns of reaction and interaction.

- The meso-system includes reactions to and interactions with various musical situations where the individual becomes actively involved in music-making and musical practices, as well as various people interacting with the same music, for instance in an ensemble setting.

- At the level of the exo-system, musical situations in which the individual is not actively involved, but which still influence his or her developmental outcomes, are included, for instance the influence of African music on more traditional Western musical practices.

- Cultures and subcultures of music emerge as whole person-music systems, and are incorporated at the level of the macro-system where interaction with music will also involve style and value systems as framework for transacting with music.

Of course, subjectivity and inter-subjectivity make any generalisation about person-music systems and their influence on developmental outcomes difficult. Nomothetic methodologies utilising statistical averages and universal characteristics cannot explain the multiple distinctions made between individuals and music in context (Van Schalkwyk 1998). These methods prove inadequate for the observation of different processes and patterns of interaction in various multidimensional contexts, or of the multi-level transactions and complex transformations that are probable in person-music systems. However, a systems paradigm for music psychology provides a new approach for observing, explaining and describing the multiple realities which emerge from person-music systems.

3. Music as an agent of change-related processes

The person-music whole system can be observed in both the qualitative and the quantitative differences which evolve during critical periods of incremental and transformational change. These changes are

continuous and include various types of temporal and contextual differences related to the levels of functioning of the person-music system. Incremental changes take place by means of the processes of differentiation and expansion in the structural and functional components of the whole system. In this respect, an individual's interaction with music provides the contextual information needed for more complex functioning. Transformational changes, referring to the processes of reorganisation instituted in reaction to the experience of disorganisation in the system at a given time in space, evolve as moments of self-reflection in interaction with music.

Both temporary and more permanent changes are influenced by the energy and information available to the system during critical periods of reorganisation (Ford & Lerner 1992; Jordaan & Jordaan 1989). The dynamic, open person-music system emerges as a context for the energy and information needed for such change.

Prenatal development is the preparation, by means of incremental and transformational changes, of the biological and psychological subsystems in order for the human being to function as a whole system. During prenatal development the foetus interacts with music either through the mother's interactions with music (listening to or participating in music-making), or by perceiving sound vibrations and rhythmic patterns *in utero*. The mother's interaction with music provides information for her own organisation and functioning. Any fluctuations or variations in the mother's biochemistry or psychology in interaction with music penetrate the boundaries between mother and foetus, influencing incremental and transformational changes.

Although by no means enough research has as yet been done, researchers such as Bunt & Alberman (1981), Chesney (1980), McQueen (1975) and Streeter (1978) have investigated *in utero* perception of sound and rhythm with reference to heartbeat, blood circulation, close-up high sounds, the mother's voice and choice of music, environmental sounds and conversations. Some singers reported that their babies were calmed when they sang, while pregnant instrumentalists reported an increase of foetal activity during or shortly after a performance. Whether anecdotal or empirical, these

observations confirm differences of state in the person-music system even before birth.

The trauma of birth (Papalia & Olds 1995; Louw 1990; Newman & Newman 1995) is yet another context in which interaction with music can be observed. Hanser, Larson & O'Connell (1983) proposed having music in labour rooms and maternity wards, indicating that music focuses attention and serves as a diversion from discomfort and extraneous hospital sounds that might create anxiety. Multimodal sensory-perceptual stimulation and activation are evident in the infant-music system at birth. Furthermore, qualitative differences can be observed relating to the processes of information transformation and patterns of system organisation. These differences become apparent in the integrated person-context relationships and behaviour episodes that evolve at later stages in life. For example, the neonate can be soothed by music that has already been part of his or her context before birth, and some mothers even report their neonates' responsiveness to the jingles of TV programmes which they regularly watched during pregnancy.

During neonatal development and infancy the interrelatedness and interdependence of the individual and music continue. The infant interacts with sound and musical subsystems in a number of ways. For example, the mother's voice when she sings a lullaby or speaks calming words to the child creates pleasing associations and experiences. This enhances behavioural responses, attachment formation, emotional arousal patterns, and cognitive processes which can later be used by the child as abstract and linguistic codes for constructing his or her own representations (Hinde 1976; Nordoff & Robbins 1977).

Processes for constructing meaning are integral to human functioning. These processes also become evident in the interaction with music. The mother's interaction with music provides information for her own ongoing self-organising and self-regulatory processes of change and adaptation, which are required to restore stability during periods of transformational change in her relationship with the baby. A successful connection with music when experiencing postnatal 'blues' or emotional trauma activates the negative feedback processes

necessary to the reorganisation of system functioning, facilitating interpersonal patterns of stability between mother and child.

During early and middle childhood music becomes a more active contributor to the context of developmental changes. Interaction between the child and music increases in complexity when transactions extend to more receptive and active involvement with various musical practices. Music listening activities and all manner of spontaneous responses to music emerge, involving energy transformation for arousal, evaluative and regulatory cognitive processes, and the extension of communicative capabilities. For example, the child's vocabulary can be expanded by means of singing, whereas the discriminatory functions necessary for clear pronunciation and comprehension of the spoken word are improved when the child becomes more aware of differences and similarities in musical tones. Furthermore, representations, fantasy and creativity, required for information-processing and problem-solving strategies, are all change-related processes facilitated by interaction with music.

The child-music system functions in multidimensional contexts, increasing the inter-subjective relationships with music. This enhances person-context transactions, which extend the child's competence in future behaviour patterns and episodes. Information-based extension of alternative representations and new realities in interaction with friends, whether sharing preferences in music or not, facilitates integrated personality development and provides information for self-reflection and self-organisation.

With the acquisition of skills for music-making, music becomes an even more important agent of the processes of change in middle childhood. Secondary benefits from music-making can be observed in improved motor and perceptual skills, enhanced psychological behaviour patterns, and more controlled cognitive processes such as eye-hand co-ordination and small motor movements. These benefits also have a reciprocal effect on reading, linguistic abilities, concentration, attention, focus, perseverance, task orientation, the translation of symbolic codes into meaningful sounds, and observation.

The adolescent-music system extends the role of music as an agent of human development even further. Both biological and psychological behaviour patterns are directly and indirectly disposed to-

wards incremental and transformational changes in the interaction with music. The unique and specifiable patterns and organisation of the music system popular during adolescence usually reflect the patterns of the interrelated system organisation and functioning of the adolescent himself or herself. For example, the temporary instances of disorganisation which adolescents experience when incremental and transformational changes are occurring are reflected in the choice of music with which they interact. Although the organisation of these music systems reflects disorganisation, it also serves to increase positive feedback loops and eventually activates the negative feedback loops necessary for incremental and transformational changes in adolescence.

Inter-subjectivity evolves from adolescent-music systems within the peer group. Music becomes an active participant in the emergence of emotional arousal patterns, cognitive processes, and various kinds of behaviour episodes such as memory, personal objectives, values, and interpersonal coping strategies. Processes for reviewing, extending or combining previously construed behaviour schemata are activated in the reciprocal relationship with music during adolescence. Through listening to music and participating in music-making, the adolescent explores a more stable self-organisation, encounters alternative constructions of reality, and undergoes reorganisation in order to adapt to internal and external changes.

During adulthood, person-music systems reflect music as source of information leading towards better integration of personality characteristics involving the person as a whole system. The importance of music as an agent of incremental and transformational changes during adulthood is largely neglected. Except for structured and specific interactions with music where the informative function of music in the design and socio-cultural contexts is interpreted according to value-based and socio-economic inter-subjective criteria, little research exists. Restricting the informational qualities of music to contexts of formalised, structured person-music systems such as the marketing and consumer context, the concert hall or music therapy, disregards the potential of music as an agent offering alternative codes for information processing, problem solving, self-organisation and self-regulation in adult development.

Technological development and the information explosion direct the relationships between the adult and music towards less spontaneous participation in music-making. There is a great lack of reliable, verifiable research findings on adult-music systems. This could be remedied by utilising the new epistemology of systems theory to observe, interpret and describe the interrelatedness of the individual and music as a means of developmental change during adulthood. It could be interesting, for instance, to investigate (through participatory observation) the energy transformation and information-processing taking place in the structural-functional and dialogical whole system of South Africans who *toyi-toyi* for long hours when making their demands heard.

Geriatric interaction with music provides information for the final developmental task of the human being, the progression towards death. A visiting music therapist from the US, Deanne Edwards, in a personal communication, says "music takes the heart home ..." and it can be deduced that, during old age, music provides information that reflects on earlier interactions between the person and music, encouraging reminiscence. Although the contexts change during old age, the ability of music to influence change-related processes remains the same throughout life.

4. Conclusion

In conclusion I would like to refer again to the purpose and function of music as an agent of human development. Music is a complex, autonomous, whole system that stimulates and activates controlled processes of incremental and transformational change. Processes of sensory and motor encoding and decoding, cognitive and affective transformation, learning and adaptation, as well as self-organising and integrative processes of style and value evolve in the person-music system throughout life. The individual responds to and interacts with music in a subjective and inter-subjective manner within cultural and multi-dimensional contexts. Meaning is generated and new realities are construed by means of various processes of information transformation. The last word belongs to Josiah Booth (cited in Davies 1978: preface):

> Music is the language of feeling. We none of us know, or speak it, in its full perfection as yet. An earnest endeavour to attain some richer

appreciation of its charms, or to acquire some higher power in the expression of its meaning, will undoubtedly bring with it a reward of inestimable worth. Exalt art, and art will elevate you.

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